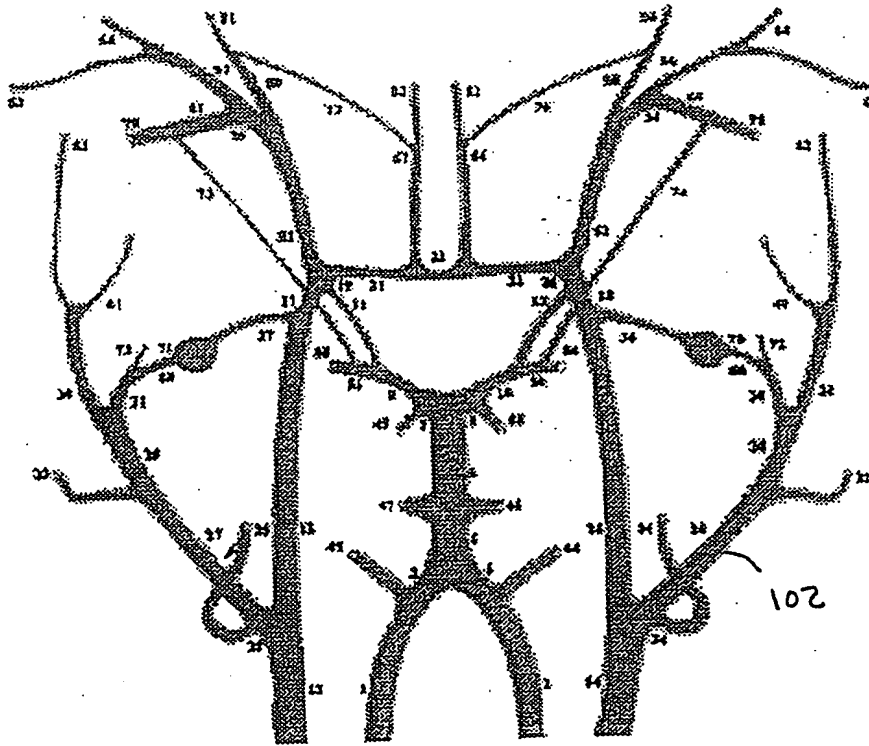


10
FIG. 1

09400365-052099



100
FIG. 2

00400355 0909

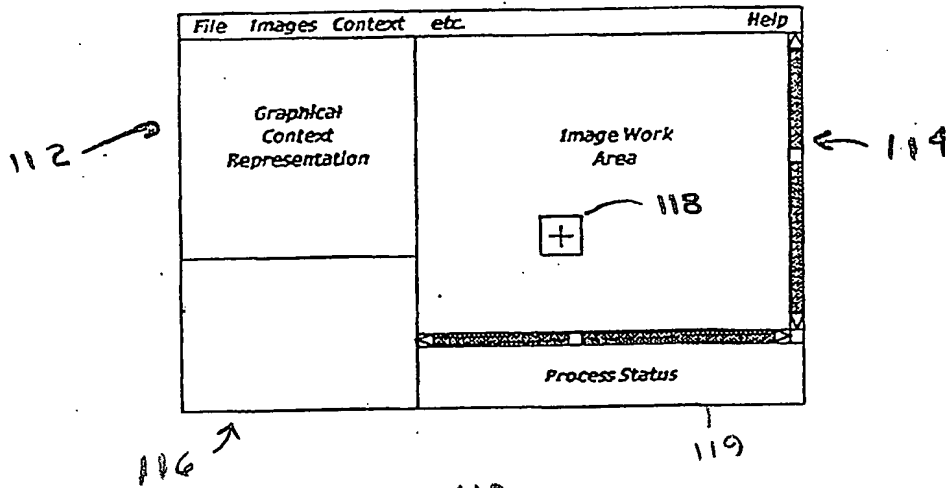
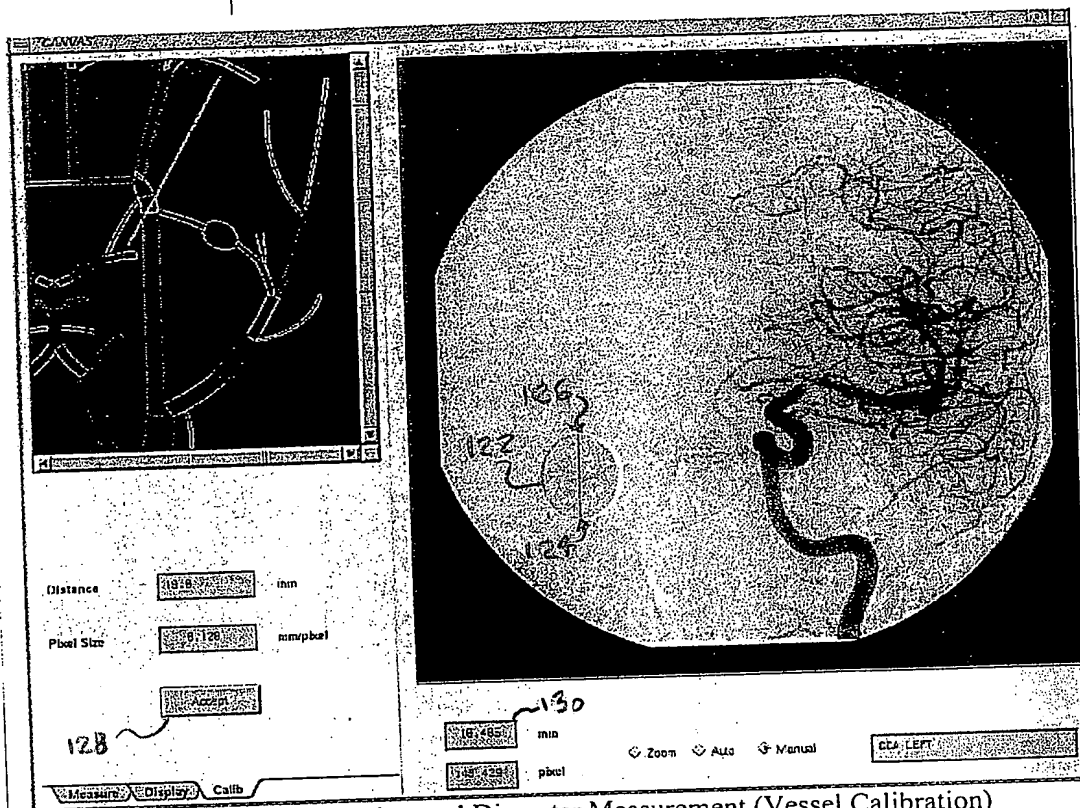


FIG. 3

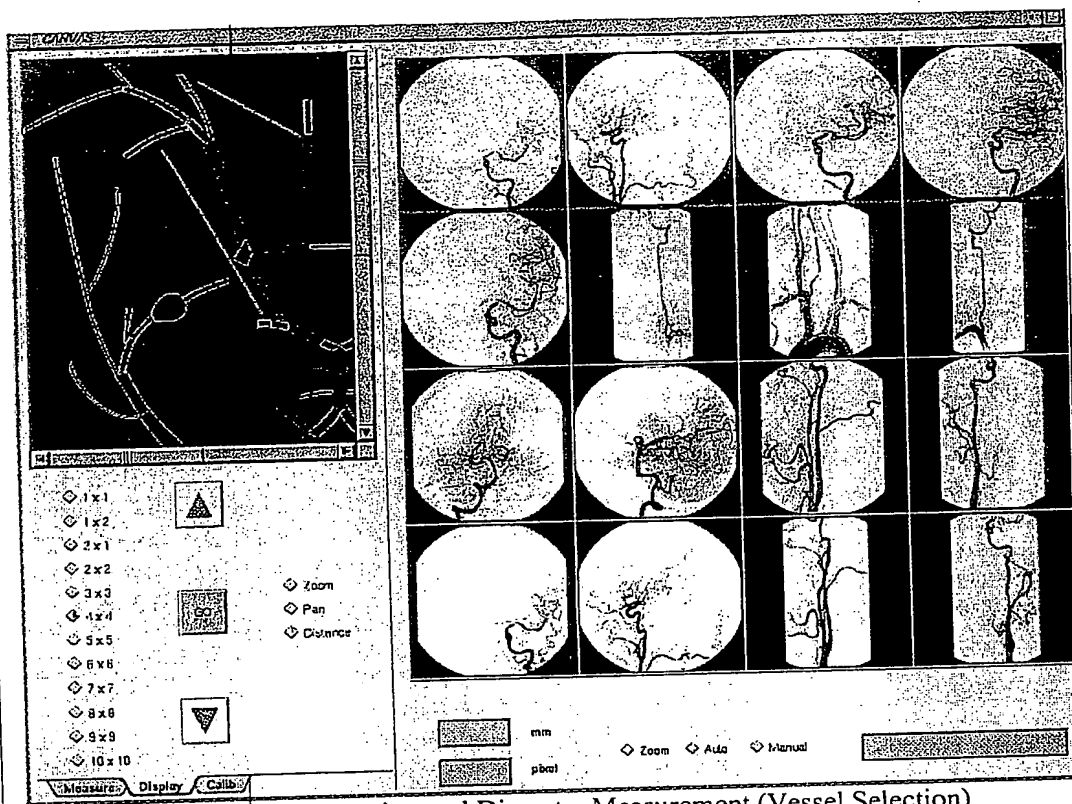
09400355-092099



Vessel Extraction and Diameter Measurement (Vessel Calibration)

120
FIG. 4

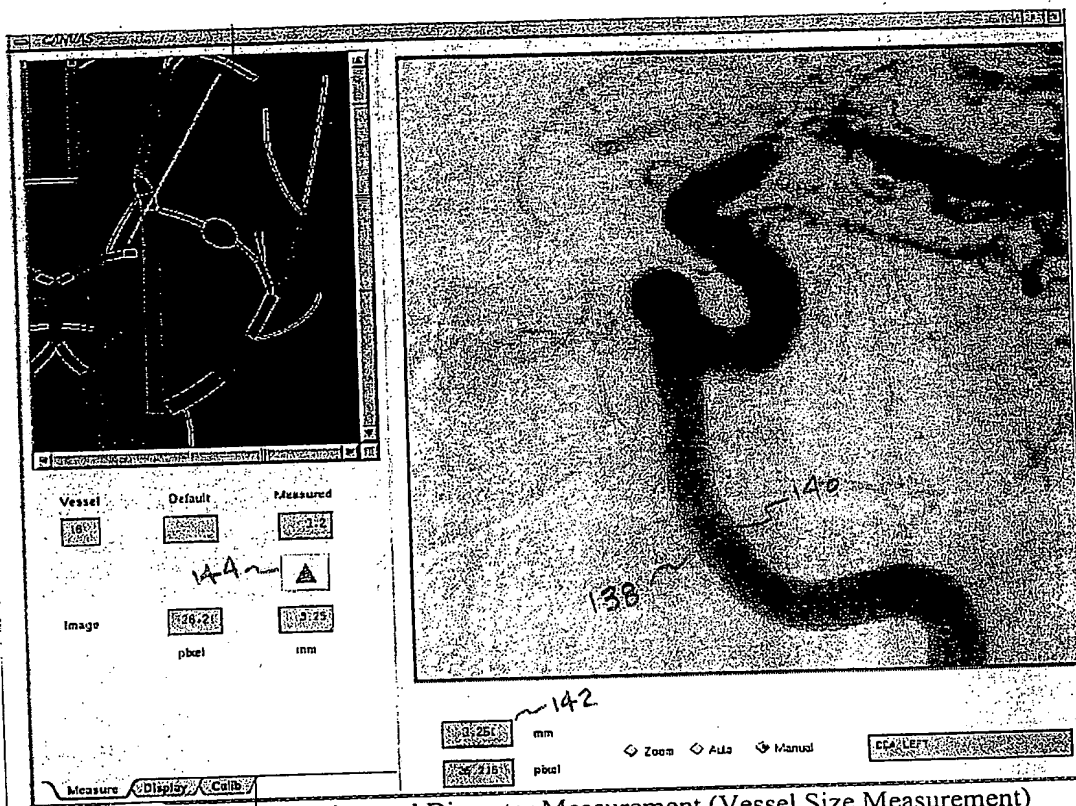
660260" 59E00460



Vessel Extraction and Diameter Measurement (Vessel Selection)

130
FIG. 5

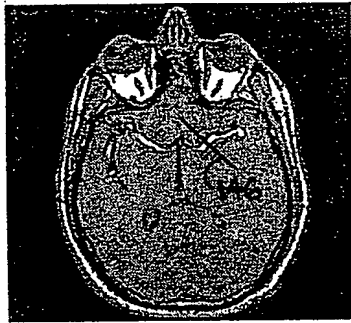
650250" 59E00460



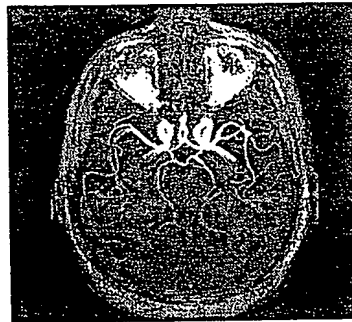
6602250-59E00460



(a)



(b)



(c)

FIG. 7

660260" 53E00460

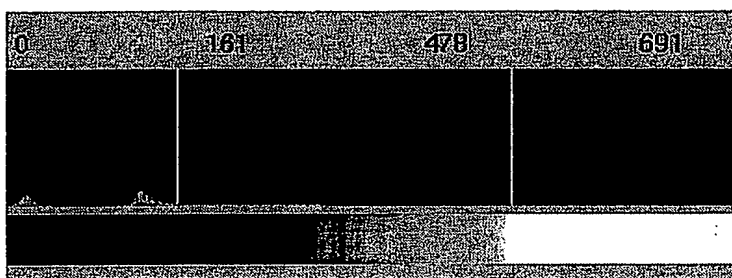


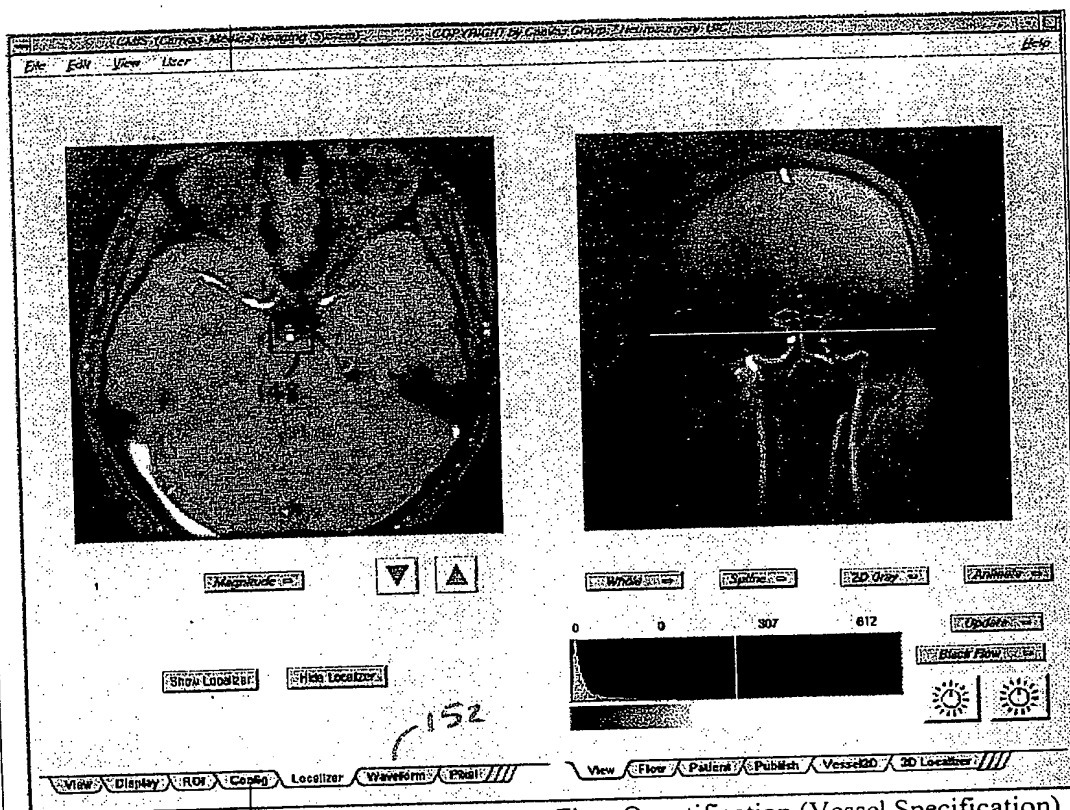
FIG. 2

The image shows a document page with a vertical line of text running down the center. The text is mostly illegible due to blurring and low contrast. The page appears to be a form or a list of items, with some words like 'ITEM', 'DATE', and 'DESCRIPTION' visible at the top. The document is placed on a dark surface.

(b)

FIG. 9

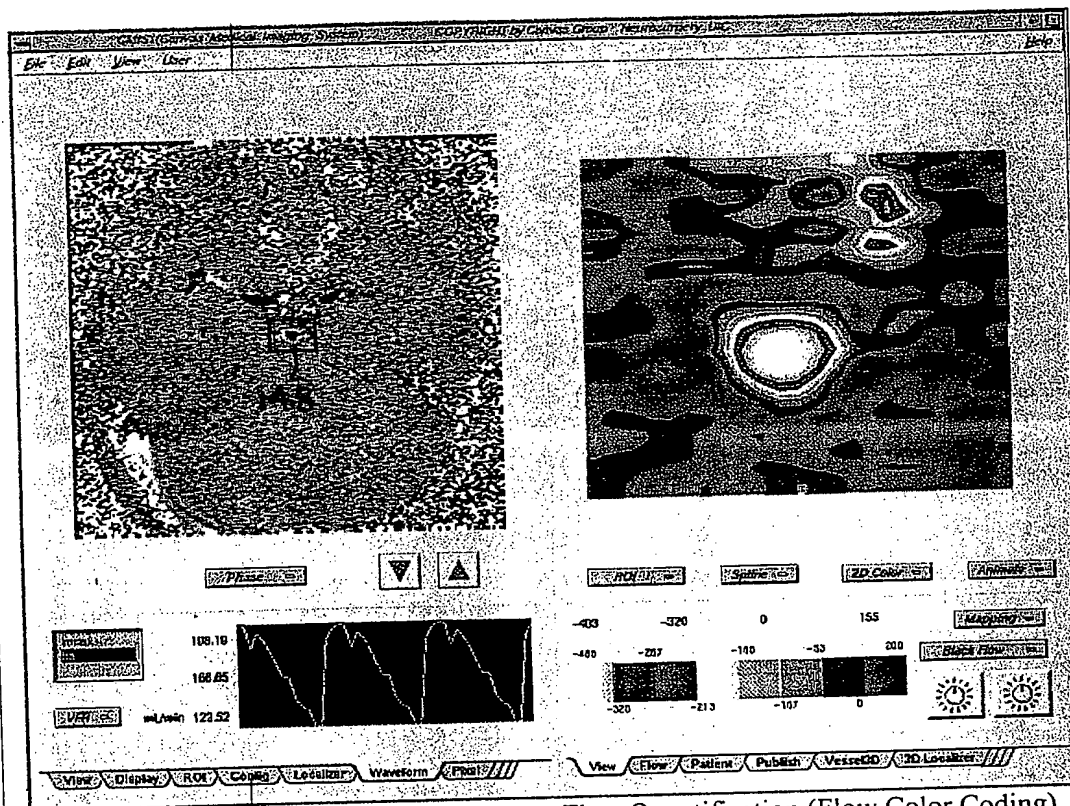
09400365-092099



Phase Contrast Magnetic Resonance Flow Quantification (Vessel Specification)

150
FIG. 10

00400355 092000



Phase Contrast Magnetic Resonance Flow Quantification (Flow Color Coding)

154
FIG. 11

660260" 59500460

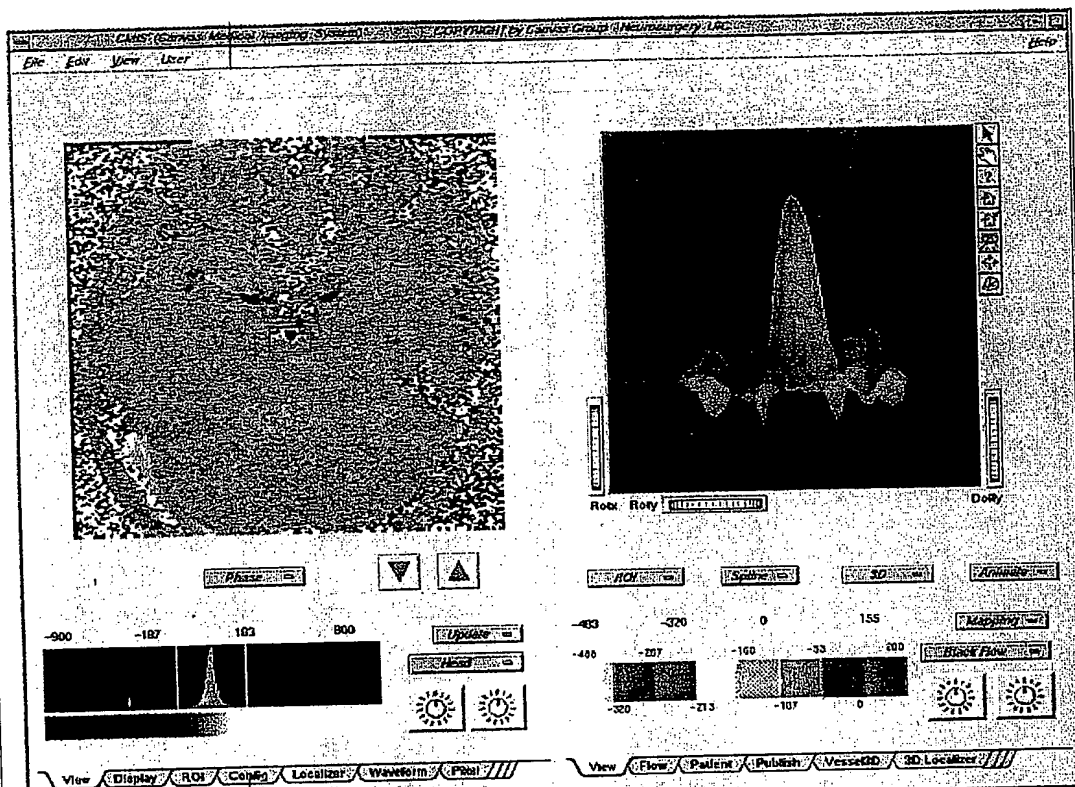


Fig.6 Phase Contrast Magnetic Resonance Flow Quantification (3D Pulsatile Flow)

156

FIG. 12

6602100 59E00460

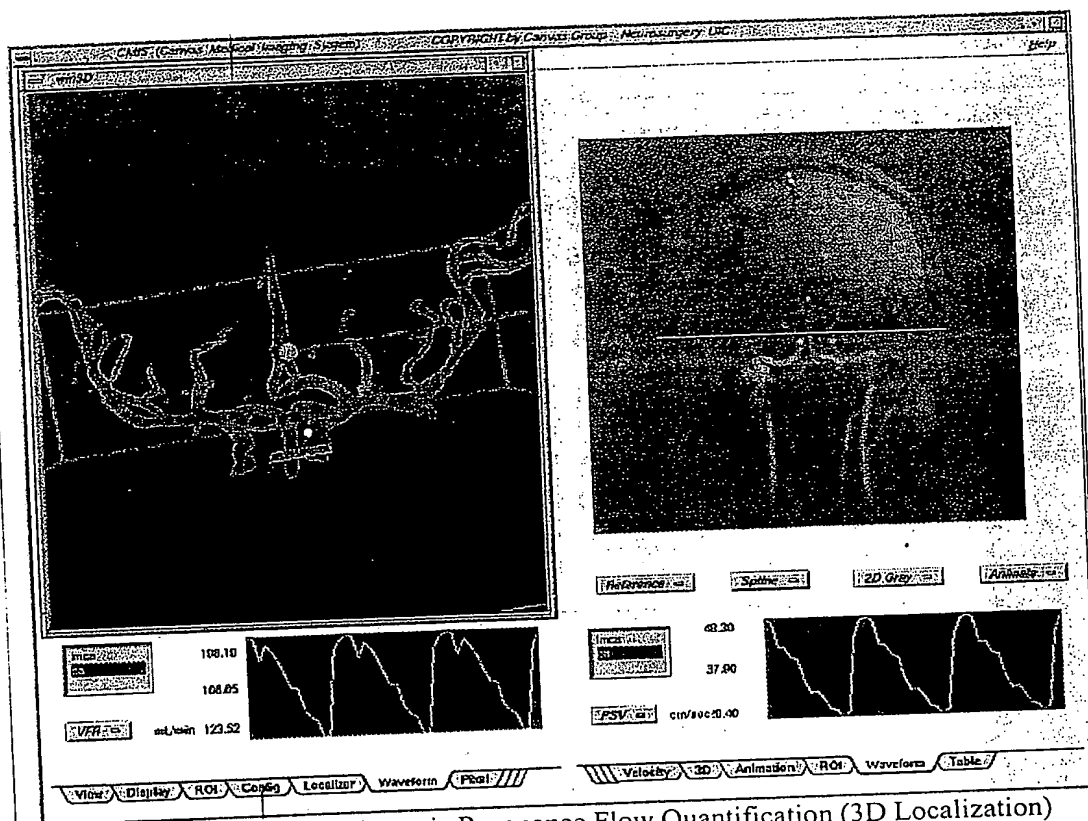
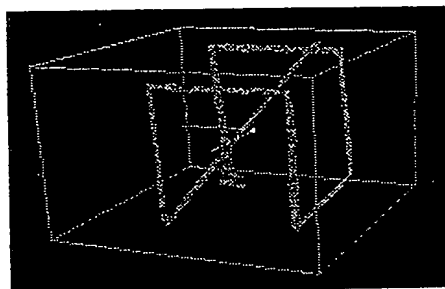


Fig.7 Phase Contrast Magnetic Resonance Flow Quantification (3D Localization)

158
FIG. 13



(a)



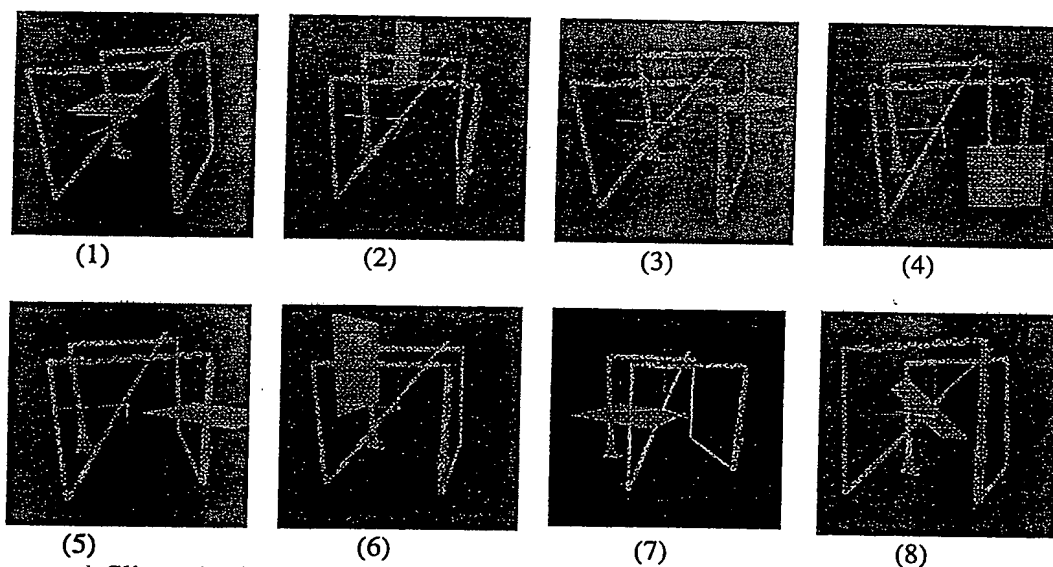
(b)

(a) Flow Phantom and (b) 3D surface rendering of the flow phantom.

FIG. 14

6602160-59200460

09400365 092099
000000 59000000



Slice selections of flow phantom for constant flow measurements in eight tubes

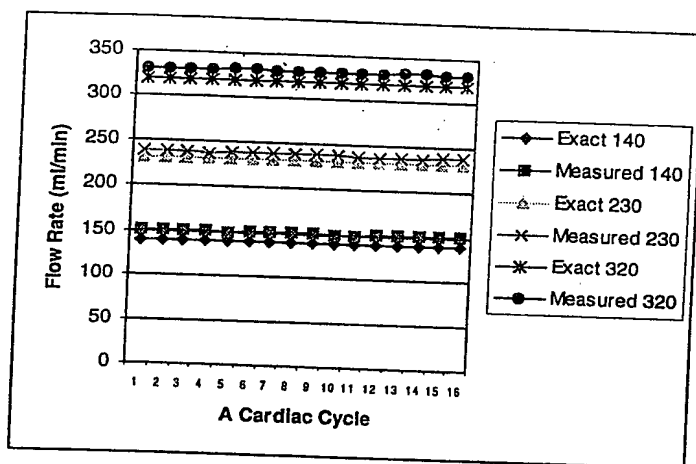
FIG. 15

(1) (2) (3) (4)

(5) (6) (7) (8)

(6) (7) (8)
Five PPMR magnitude images for eight tubes
FIG. 16

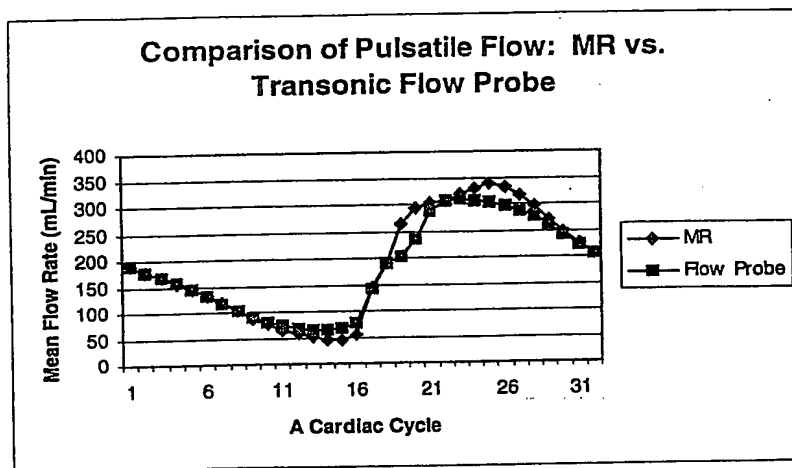
650260" 5920760



Comparison of Flow Measurements for a Constant Flow Phantom in Three Different Flow Rates (140, 230, and 320 ml/min): Actual Flows vs. PCMR Flow Measurements without Flow Offset Compensation

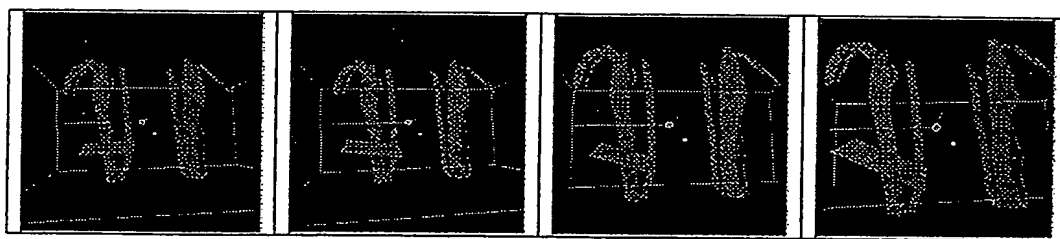
FIG. 17

650250" 53E00460



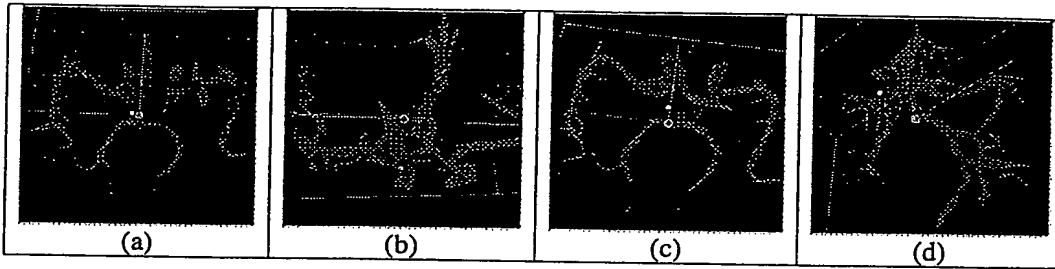
Pulsatile Flow Phantom: Flows Measurements for the tube in the center of the phantom Using PCMR and Transonic Flow probe

FIG. 18



3D surface renderings of perpendicular cut at three misalignment 10°, 20°, and 30° for the left common carotid artery

FIG 19



3D localization: the perpendicular cuts for (a) left middle cerebral artery, (b) right anterior cerebral artery, (c) left posterior communicating artery, and (d) a left middle cerebral artery M3 branch

FIG. 20

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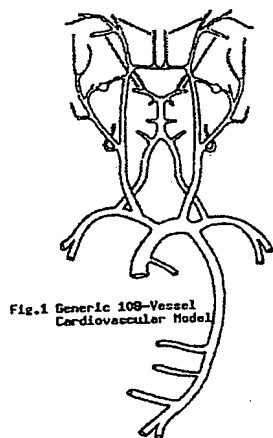
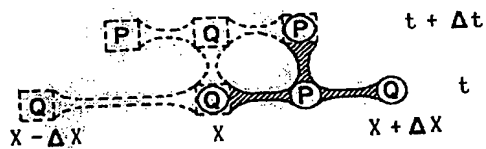
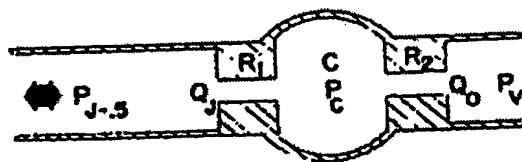


Fig. 1 Generic 108-Vessel Cardiovascular Model

FIG. 21



Finite-Difference Scheme



RCR Termination

FIG. 22

Legends:

- RMC - Right Middle Cerebral Sector
- LMC - Left Middle Cerebral Sector
- REC - Right External Carotid Sector
- LEC - Left External Carotid Sector
- IC - Anterior Cerebral Sector
- BS - Basilar Sector
- VS - Vertebral Sector

Seven-Sector Cerebral Model

Seven-Sector Cerebral Model

650260 5980460

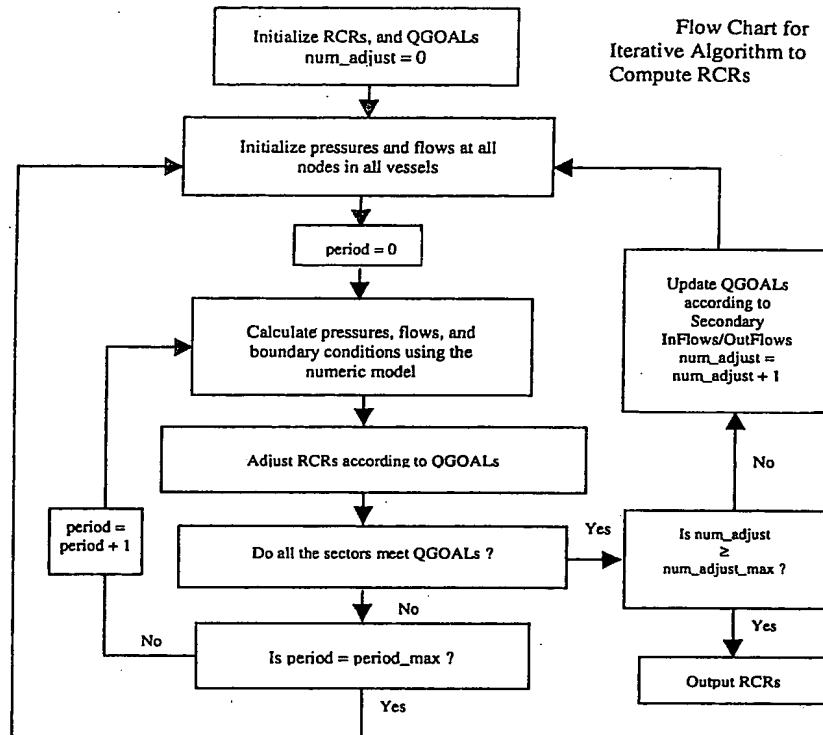
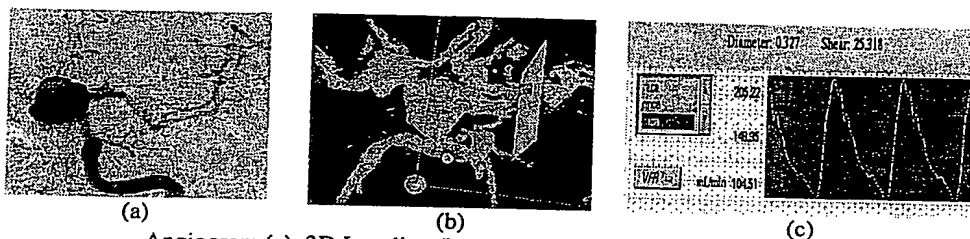
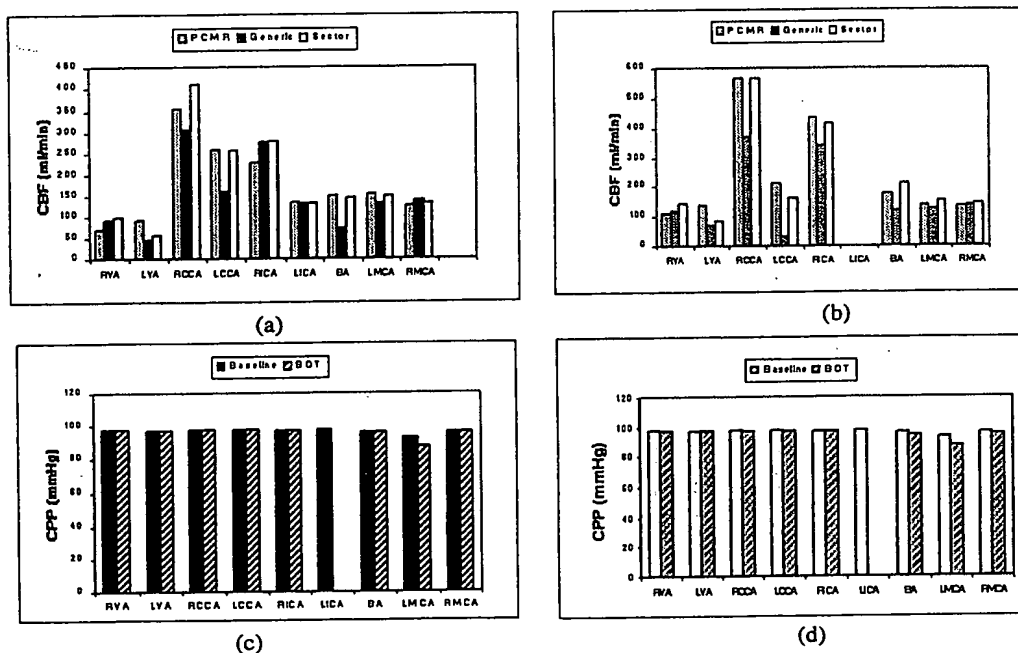


FIG. 24



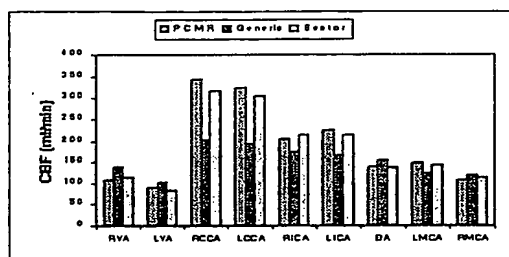
Angiogram (a), 3D Localizer Image (b), and Flow Waveform (c) for Case 2.

FIG. 25

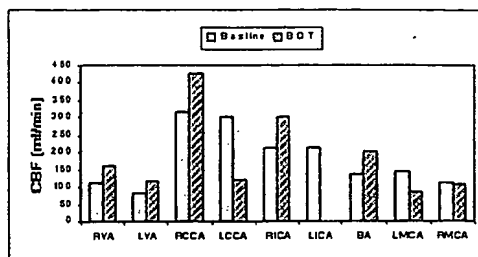


Results for Case 1: (a) Comparison of CBF (Cerebral Blood Flow) at Baseline and (b) post-BOT between PCMR and simulations from Generic and Sector Models; Comparison of CPP (Cerebral Perfusion Pressure) between Generic (c) and Sector (d) simulations at Baseline and BOT

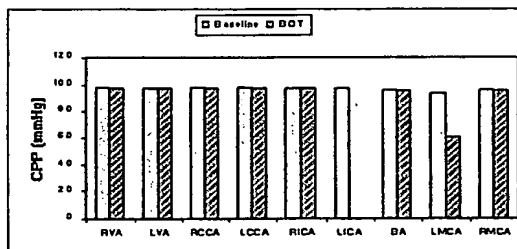
FIG. 26



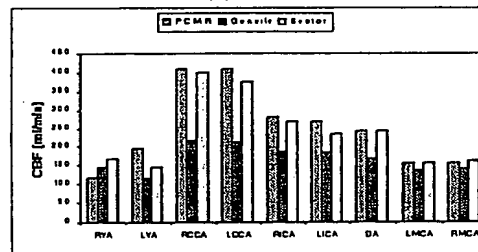
(a) Case 2



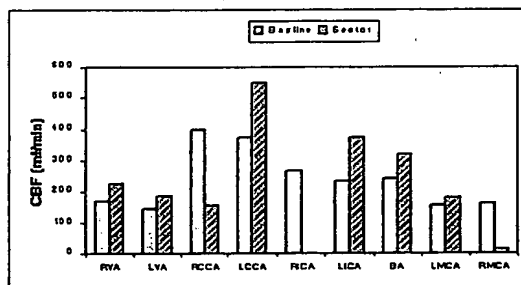
(b) Case 2



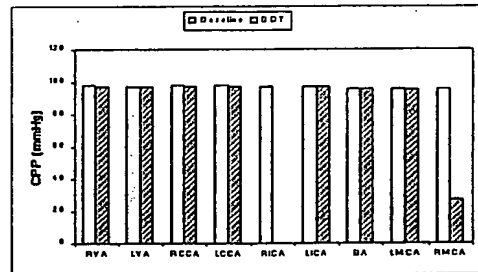
(c) Case 2



(d) Case 3



(e) Case 3



(f) Case 3

Results for Case 2 (a)-(c) and Case 3 (d)-(f): Comparison of CBF at Baseline in Case 2 (a) and Case 3 (d) between PCMR and simulations from Generic and Sector Models; Comparison of CBF in Case 2 (b) and Case 3 (e) and CPP in Case 2 (d) and Case 3 (f) between simulations at Baseline and BOT

FIG. 27

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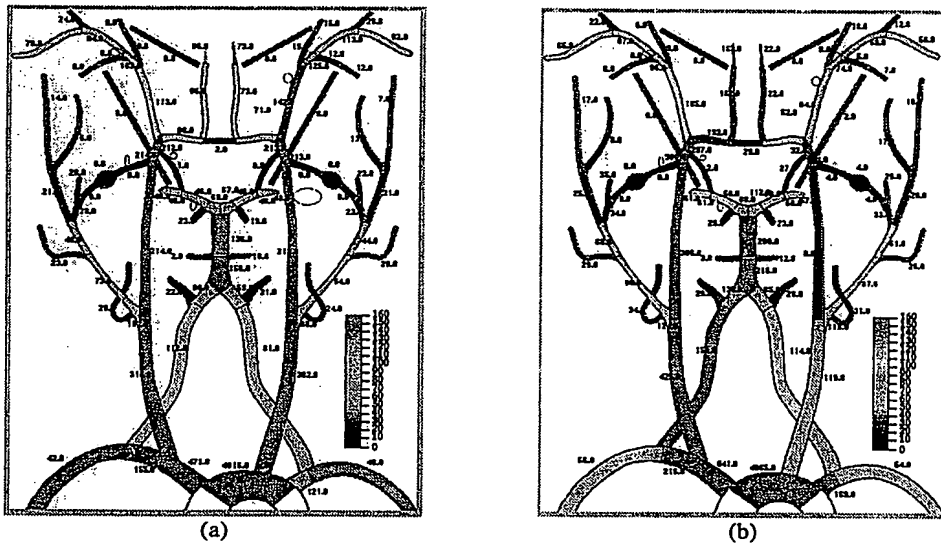


Fig.7 Simulated CBF distributions at Baseline (a) and BOT (b) for Case 2

FIG. 28

```

graph TD
    Start([Start]) --> Init[201  
T = 0  
Initialize pressures and flows at all points in all vessels]
    Init --> EqState[202  
Equation of State  
Calculate cross-sectional area at all points using the current pressure]
    EqState --> MassBalance[204  
Mass Balance  
Calculate pressures at all points  
except the pressures at junction centers]
    MassBalance --> InletForcing[206  
Inlet Forcing Function  
Update pressure sources or flow sources]
    InletForcing --> IntJuncBC[208  
Internal Junction Boundary Conditions  
Calculate flows at all junctions and pressures at all junction centers]
    IntJuncBC --> MomentumBalance[210  
Momentum Balance  
Calculate the flows at all points except the flows at junctions  
Introduce internal flow sources using the special flow forcing functions]
    MomentumBalance --> TermBC[212  
Terminal Boundary Conditions  
Calculate flows at last nodes in all efferent vessels]
    TermBC --> TimeInc[214  
T = T + ΔT  
Increment time]
    TimeInc --> Check{216  
Check}
    Check -- "T < Tmax" --> EqState
    Check -- "T = Tmax" --> Stop([Stop])
  
```

200
FIG. 29